ABSTRACT OF THE DISCLOSURE

A main unit inserts first message-oriented data having a fixed data length to an overhead of a first main signal, and transfers the first main signal to a plurality of slave units. Each of the plurality of slave units receives the first main signal from the main unit, and separates the first message-oriented data inserted to the overhead of the first main signal. Additionally, each of the plurality of slave units inserts second message-oriented data having a fixed data length to an overhead of a second main signal, and transfers the second main signal to the main unit. The main unit receives the second main signal from the plurality of slave units, and separates the second message-oriented data inserted to the overhead of the second main signal. As described above, one-to-n or n-to-one data transmission is performed using message-oriented transmission data having a fixed data length, according to the present invention. Thus, the sizes of software and hardware included in each slave unit are comparatively small.